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TWO NEW SPECIES OF MELYRIDAE FROM CALIFORNIA AND ONE FROM BRITISH COLUMBIA, INCLUDING TWO NEW GENERA

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Recently while studying a small collection of Histeridae and Melyridae submitted to me by Mr. Ralph Hopping of the Canadian Entomological Branch, I discovered the interesting new species described below. With Col. Casey's excellent paper on the Melyridae (Coleopterological Notices VI, p. 456) at hand it becomes an easy matter to gain an understanding of the several genera. The species of this family are abundant, as proved by the many new forms which are constantly coming to hand. Two of the new species represent new genera. In studying the melyrids a moderately strong glass, or preferably a binocular microscope, should be used. It really requires much intensive study to fully appreciate and properly correlate the slight but valid characters presented by the members of this moderately large and homogeneous family.

The following are the new genera and species.

Listropsis new genus

Body sublistriiform, head large, antennae as in *Listrus* and slender. Pronotum slightly dilated posteriorly, without a submarginal delimiting line and not serrulate at the sides. Pubescence dual and sparse. Anterior tibiae devoid of spinules, inner spurs dilated and transversely hooked at tip; tarsal appendages well developed and as long as the claws. Elytral sides fimbriate as in *Trichochrous*, fimbria moderately long and not close-set.

Epipleura narrow, inner margin well defined to near the apex; outer margin obsolescent beyond the middle toward the apex.

Type of the genus, *Listropsis tinctus* new species.

Listropsis tinctus new species

Form parallel, oblong and slightly elongate, about two and a half times as long as wide, only moderately convex and slightly flattened on the dorsum. Color black, shining, with more or less of an aneous tinge and in some lights feebly purpurescent; antennae piceous, two basal joints black, the following three rufopiceous; mouth-parts piceous; femora nigro-piceous, trochanters, tibiae and tarsi rufous.

Pubescence sparse, not coarse, semirecumbent, hairs greyish with slightly brownish tips, denser in a narrow line along the suture and deflexed sides and about the humeri; those of the pronotal disk rather more slender and pale; very sparsely intermixed throughout the upper surface with long, slender and erect hairs. Pronotal lateral fringe moderately long, dark and not close-set, and bristling; those of the elytral sides ashy, moderately long anteriorly, gradually but slightly decreasing in length toward the apex and not closely placed. Hairs of the under surface moderately short, greyish in color and recumbent.

Head moderate in size, slightly wider than long, muzzle moderately short; front rather broad, feebly convex, longitudinally impressed each side of the middle between the antennae, feebly convex along the median line with an oval, glabrous area adjacent to the clypeal base; distinctly longitudinally rugulose within the sides over the antennal insertions, very sparsely punctate, punctures moderately small; clypeus and labrum pale, the latter more or less piceous at base, mandibles rufous at tip, immediate mouth boundaries testaceous. Eyes rather large, rounded, rather strongly and evenly convex, not emarginate anteriorly. Antennae scarcely attain the pronotal base, feebly incrassate; third joint obconical, fourth and fifth subtriangular, the latter slightly larger than the fourth or sixth; sixth to the eighth inclusive subequal in size; ninth and tenth stouter, a little larger and more rounded, about as long as wide, eleventh pointed oval with apex obtuse and slightly compressed.

Pronotum somewhat transverse, about a third wider than long; apex subtruncate in rather broad circular arc; sides moderately arcuate, widest just behind the middle, thence less so and somewhat convergent to apex; base broadly arcuate, very slightly truncate in middle two-fourths; angles rounded, the basal rather broadly so; disk very feebly convex antero-posteriorly, moderately so from side to side, very sparsely punctate, punctures rather coarse, more densely placed against the sides, surface smooth and shining.

Elytra one and three-fourths times as long as wide at base, sides parallel; slightly flattened on the dorsum, arcuately declivous laterally; humeri rather tumid and moderately broadly rounded; sparsely punctate, punctures rather broadly impressed, making the surface appear somewhat wavy, shining.

Abdomen rather finely and closely punctate. Legs not stout, femora somewhat parallel; tarsi slender.

Male. Fifth ventral abdominal segment apparently sinuato-truncate at apex. This character is not easily seen on account of the manner of mounting, the abdomen being deflexed.

Measurements. Length (Type) 2.9 mm.; width 1 mm.

Holotype, male, in the National collection at Ottawa, Canada. Two paratypes: One in the collection of Ralph Hopping, the other in that of the author. Three males studied.

Type locality. Mojave, California. Collected on May 3rd, 1919, by Mr. Hopping, on flowers of *Yucca aborescens*.

Listropsis tinctus appears to be quite distinct from all the different species of *Trichochrous* and *Listrus*. The epipleura are narrow and quite horizontal; the inner margin distinct throughout the length, the lateral margin becomes obsolescent near apex and the surface plane is inclined to turn outward. The distinctly aeneous upper surface, rufous trochanters, tibiae and tarsi, as well as the sparse pubescence, are very salient characters.

Hoppingiana new genus

Form elongate, moderately depressed. Head rather transverse, front broad, muzzle unusually short, palpi as in *Dasytes*; eyes moderately large, rounded, evenly convex and only moderately prominent, not emarginate anteriorly and sparsely setose. Antennae long, rather slender, third joint small and obconical,

second subglobular; eleventh joint elongate oval and as long as the preceding two taken together; not serrate. Tempora not prominent.

Pronotum with a well defined submarginal delimiting line. Epipleura distinctly defined in basal third with their surface plane continuing that of the declivous sides of the elytra; obsolete in distal two-thirds. Ungual appendages well developed, as long as the claws and free in about distal half. Tibiae without spinules or terminal spurs.

Type of genus, Hoppingiana brevilabris new species.

The generic characters of *Hoppingiana* do not harmonize with any of the genera defined by Col. Casey. It is apparently most closely related to *Listromimus* Casey.

In *Listromimus* the epipleura are narrow, vanishing far before the apex but with their plane almost horizontal, the pronotum has a strong impressed line parallel to the lateral edge and at some distance from it, not attaining base or apex; the pubescence is extremely dense and whitish-ashy in color; eyes small and very prominent.

In both *Hoppingiana* and *Listromimus* the muzzle is short, labrum pale and the antennae slender and elongate. In *Dolichosoma* the epipleura are entirely obsolete and the pronotum is without a submarginal delimiting line. In *Dasytes* the ungual appendages are very short or rudimentary, and the epipleura more horizontal at base.

I take great pleasure in naming the genus after my friend, Mr. Ralph Hopping, of the Canadian Entomological Branch, as a slight token of esteem, and in recognition of what he has done toward the preservation of our forests.

***Hoppingiana brevilabris* new species**

Form elongate, sub-depressed and slightly cuneiform, head and prothorax relatively small. *Color* black, luster dull to feebly shining; tibiae and tarsi nigropiceous; ligula and lacinia and apical margin of the labrum testaceous. Surface somewhat finely asperately sculptured.

Pubescence nigro-fuscous in color, moderately sparse and quite evenly distributed; somewhat short, a little longer on the pronotum and head, semi-erect and the lateral fimbriae are absent. Hairs of the under surface of the body slightly longer and more slender, not conspicuous.

Head noticeably wider than long, surface rather densely asperato-punctate on the vertex, at the periphery and on the tempora; front about four times as wide as an eye when viewed from above, broadly impressed, each side of the depression slightly deeper than in the median area, sparsely punctate, surface rather smooth, but finely rugulose toward the clypeus; each puncture with a blackish erect seta; margin of the front slightly and transversely prominent just behind the clypeus, the latter very short and transverse. Eyes moderately large, evenly convex, slightly oval, not emarginate anteriorly and with very short, stiff and erect setae arising from between the corneae. Antennae long and quite slender, extending beyond the pronotal base, not incrassate, not in the least serrate; third joint small and obconical, joints four to eight asymmetrically sub-globular, fifth joint noticeably larger, ninth and tenth about as long as wide, subequal in size, eleventh as long as the preceding two taken together, a little more than twice as long as wide and feebly compressed.

Pronotum about a fourth wider than long, widest at about the middle; apex broadly and feebly arcuate, not margined; base broadly arcuate and margined with a flattened and rather coarse bead; sides irregularly arcuate, slightly sinuate before and behind the middle, margin unevenly subserrulate as viewed from above, or quite strongly arcuate just before the middle as viewed from the side; angles rounded, the basal very broadly so, the sides being arcuately continuous with the base; disk rather irregular, feebly arcuate antero-posteriorly and broadly convex from side to side, the latter somewhat declivous; at about an eighth of the distance from the margin a strong delimiting line and sulcus which with a gentle curve passes from the apex to the base, where it passes into a narrow submarginal basal groove; surface of the sulcus and area between it and the margin very roughly reticulate; central pronotal area smooth and rather closely punctate, punctures rather strong.

Elytra oblong, a little more than twice as long as wide; sides slightly divergent posteriorly; disk feebly depressed in the central area, but rather strongly declivous at and for a short distance behind the humeri, thence becoming very gradually so to apex; humeri rounded and slightly tumid; surface finely reticulato-punctate and slightly impressed at base within the humeri. Scutellum about as long as wide and rounded at apex.

Abdomen finely and not densely punctate. Legs slender. Sexual characters not determined.

Measurements. Length (type) 3.5 mm.; width 1.2 mm.

Holotype, of undetermined sex, placed in the National collection at Ottawa. A paratype in the collection of Mr. Ralph Hopping and one in that of the author. Three specimens studied.

Type locality. Midday Valley, Merritt, B. C. Collected by Mr. George Hopping, July 26th, 1921. Taken from *Pinus ponderosa*. The other two specimens were taken by N. L. Cutler in the same region on June 22nd, 1922, from *Pseudotsuga taxifolia*.

In facies *Hoppingiana brevilabris* resembles *Dasyrhodus impressicollis* Fall. In the latter species the terminal joint of the maxillary palpi is triangular and the epipleura are well developed.

It also resembles certain species of *Dasytes*, notably *nevadensis* Blais., but here the epipleura are more horizontal and the unguar appendages are small and rudimentary.

***Trichochrous aridus* new species.**

Form narrow and elongate but a little stouter than in *innocens* Casey, subparallel and convex. *Color* black to brownish from immaturity; antennae and legs more or less rufo-piceous or slightly darker; surface more or less shining.

Pubescence rather short, coarse, decumbent and sparse, fulvous in color; lateral marginal fringe of the pronotum rather short and close-set; elytral fringe longer and less close.

Head flat between the eyes, very sparsely punctate, muzzle short, frontal margin rather prominent; epistoma pale and glabrous.

Pronotum rather less than a fourth wider than long; sides quite strongly arcuate, widest at about the middle, somewhat straighter anteriorly, almost straight to feebly sinuate and slightly convergent posteriorly; apical angles quite

broadly rounded; apex nearly truncate; basal angles subobtusate to almost rounded; base broadly arcuate and slightly wider than apex; disk rather broadly convex from side to side, rather strongly declivous laterally, punctures small and quite widely separated.

Elytra oblong, scarcely twice as long as wide, margins very narrowly reflexed, the submarginal groove rather wide beneath the humeri, the latter rather prominent and tumid; punctures rather dense, surface more or less finely rugulose.

Abdomen rather densely punctate.

Male. Narrower. Fifth ventral abdominal segment transversely truncate.

Female. Somewhat broader. Fifth ventral rather long, rounded at apex, which is slightly deflexed.

Measurements. Length (types) 2.9-2.8 mm.; width, 1-1.1 mm.

Holotype, male, and *allotype*, female, to be deposited in the National collection at Ottawa. Paratypes in the collection of Mr. Ralph Hopping and in that of the author; also, in the California Academy of Sciences, San Francisco, California.

Type locality. Camp Greeley, Fresno County, California, at an elevation of 2,800 feet. Collected on May 18th, 1910, by Ralph Hopping, who has also taken it at Kaweah, Tulare County.

Aridus belongs to the *innocens* group, and differs from that species in having the pronotum widest at middle and more or less straight or subsinuate in front of the basal angles; the elytra are concolorous. In *innocens* the elytral apices are more or less rufous.

A NEW CHERMES FROM PINE (HEMIPTERA APHIDAE)

BY P. N. ANNAND,

Stanford University, California.

The writer is at present engaged in a study of the Aphidae of North America commonly included in the genus *Chermes*. During this study what is evidently a new species appeared and is herewith described as the first contribution to this study. The author would be interested in seeing members of this genus from any part of North America.

The well known name *Chermes* is retained in describing this species, although it is evident that it is no longer available for the Aphidae, until such a time as the literature is available and the correct name for the genus can be determined.

The following description is based on three apterous females obtained from Professor G. F. Ferris of Stanford University, to whom my thanks are due. The holotype is in the Stanford collection.

Chermes armiger n. sp.

Apterous female (Fig. 1, A). Length (flattened on the slide), 1.28 mm. Dorsum of first two segments entirely covered with chitinized plates bearing scattered wax pores, the diameter of the larger (Fig. 1, B) being slightly greater than that of a single eye facet (Fig. 1, E). The third and fourth segments are divided longitudinally into three plates, the lateral plates being the shorter, with the pores

distributed in greatest numbers toward the posterior edges of the segments. The plates on the fifth and sixth segments are less heavily chitinized toward the anterior edge and are broken into more or less distinct divisions. Each of the middle dorsal plates is partially divided by the dorsal median line. The rest of the segments are without plates but bear rows of irregularly placed setae. The pores on the anterior segments (Fig. 1, B), large, divided into a number of

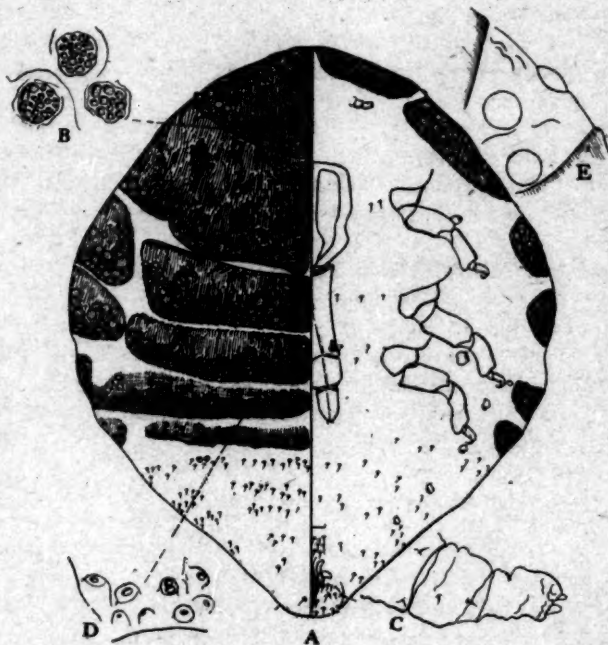


Fig. A., *Chermes armiger* n. sp.; Fig. B., enlarged wax pores from first segment; Fig. D., enlarged wax pores from fifth segment; Fig. E., dorsal view of eyes. Figures B, C, D, and E are all drawn to the same scale.

divisions by means of reticulations. They gradually decrease in size and number of divisions posteriorly and may be reduced to undivided raised pores on the fifth and sixth segments (Fig. 1, D). The ventral surface with no chitinized plates but with scattered setae. The antennae (Fig. 1, C) very small but slightly longer than the anterior tarsus, indistinctly three segmented; end of last segment bearing two indistinct tubercles. The legs are short and heavy. The beak about three times as long as the anterior femur, apparently three segmented.

Type host and locality. On *Pinus monticola*, Hayden Lake, Kootenay County, Idaho. Collected by J. S. Boyce.

Notes: The alate females are unknown and nothing is known concerning the biology and habits of this species. The species is distinguished at once from other members of the same genus by the peculiar pores, their scattered distribution and the large size of the chitinized plates.

NEW EPHEMERIDAE FROM ILLINOIS*

BY J. MCDUNNOUGH,

Ottawa, Ont.

Through the courtesy of Dr. S. Forbes I have recently had the opportunity of working over the Ephemerid material contained in the collection of the Illinois State Natural History Survey at Urbana, Ill. In this connection I offer the following descriptions of species which appear to be undescribed, as well as a note on a Mexican species, the identity of which has been doubtful.

Campsurus decoloratus Hagen

This species was described (1861, Syn. Neur. N. Am., 43) from alcoholic material, presumably females, from Matamoros, Mexico. It has been included in our North American list by Banks on the strength of a doubtful identification by Eaton (Mon. p. 41). Amongst the material before me are two males from Brownsville, Texas, a town just across the Rio Grande from Matamoros, which show the black forelegs mentioned by Hagen and agree fairly satisfactorily with the description in other details. In view of the similarity of localities, I am holding for the present the name *decoloratus* Hag., to these specimens and figure the male genitalia.



Fig. 1.—a. Male genitalia of *Campsurus decoloratus* Hagen;
b. Male genitalia of *Campsurus primus* McD.

Campsurus primus sp. nov.

Male. Pale yellowish, thorax somewhat deeper; anterior legs with femora yellow, tibiae and tarsi blackish, antennae and setae whitish. Wings hyaline with pale veining, costa not shaded with darker color. Genitalia very distinct from *decoloratus*, forceps with thin process projecting from their bases, in length about one third of forceps, penes long, broad and somewhat incurved at tip, only slightly shorter than forceps.

Length of body 10 mm., of forewing 12 mm.

Holotype—♂, Grand Tower, Ill., Aug. 14, 1898, (C. Hart) No. 24529; in Collection Natural History Survey Ill., Urbana, Ill., U.S.A.

Paratypes—9♂, same data, five of them in Canadian National Collection, through the kindness of Dr. S. Forbes.

Baetis harti sp. nov.

Male. Turbinate eyes large for size of insect, oval, black-brown (dried); head blackish, thorax deep black-brown; abdomen with segments 2-6 hyaline whitish with black dots along spiracular area, posterior segments chocolate brown,

*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agric., Ottawa.

slightly paler ventrally. Legs pale yellowish; setae whitish. Wings hyaline, intercalaries on primaries short but distinct, those between veins 2 and 3 obsolescent. Secondaries narrow, long, with prominent costal projection and two longitudinal veins, rather similar to Dodds' figure of *quilleri* (Trans. Am. Ent. Soc., XLIX, Pl. IX, fig. 36).

Length of body $2\frac{1}{2}$ mm.; of forewing 3 mm.

Holotype—♂, Urbana, Ill., July 11, 1898, (C. Hart), No. 24491; in Coll. Natural History Survey of Illinois, Urbana, Ill.

Paratypes—3 ♂, same data. Two of these in Canadian National Collection, Ottawa.

This is one of the smallest known species. I had at first identified it as *pygmaea* Hagen from the St. Lawrence region, but believe that this latter name for the present had better be held to an equally small species in the *flavistriga* group of which we have a series collected by Mr. C. H. Curran, at Hemmingford, Que. *Harti* belongs in the *propinquus* group and apart from size can be identified by the narrow secondaries with prominent costal projection.

***Baetis pallidula* sp. nov.**

Male. Turbinate eyes very large (larger than in *intercalaris*) circular, deep reddish (dried); thorax pale olivaceous-ochreous with the posterior dorsal prominence of mesothorax creamy; abdomen with segments 2-6 very pale, hyaline yellowish with pale-centered black spiracular dots. Segments 7-10 dorsally light brown, ventrally deep creamy. Legs pale yellowish, setae whitish. Wings hyaline, secondaries broad, much as in Dodds' figure of *moffatti* (Trans. Am. Ent. Soc. XLIX, Pl. IX, fig. 38). Length of body 4 mm.; of forewing 5 mm.

Holotype—♂, Stony Creek, Muncie, Ill., May 24, 1914, in Coll. Nat. History Survey of Illinois, Urbana, Ill.

Paratypes—2 ♂, same data, one in the Canadian National Collection.

The pale thorax readily separates *pallidula* from the described species.

***Pseudocloeon veteris* sp. nov.**

Male. Turbinate eyes large, circular, much larger than in *dubium* Wlsh.; thorax deep brown, shaded with paler on posterior dorsal prominences and lateral sutures; abdomen with segments 2-6 semihyaline yellowish with subdorsal rows of minute reddish dots, situated one on each side of the median line in the central portion of segment; posterior segments light chocolate brown, paler ventrally. On the pale abdominal segments there is a medio-ventral row of brown spots, situated one on posterior margin of each segment. Legs yellowish, wings hyaline.

Female. Thorax light ochreous, abdomen dorsally light chocolate brown; maculation as in male. Length of body $4\frac{1}{2}$ mm., of forewing 6 mm.

Holotype—♂, Urbana, Ill., May 13, 1898, (C. Hart), No. 24400; in the Collection Natural History Survey of Illinois.

Allotype—♀, same data, in same collection.

Paratype—♂, same data, in Canadian National Collection, Ottawa.

The specimens are rather old and the colours in fresh material may be brighter but the species should be readily recognized by its size, large eyes and the abdominal maculation. It is apparently related to *punctiventris* McD.

Heptagenia (Ecdyonurus?) integer sp. nov.

Male. Head and thorax whitish clay-color. Abdomen hyaline on first seven segments, opaque whitish on posterior segments; posterior edge of segments very narrowly edged with black dorsally; a lateral row of black dots, one on posterior portion of each segment at end of black segmental edging, is typically present. Setae pale with narrow brown intersegmental rings; legs whitish, femora ringed centrally and tipped with ruddy. Wings hyaline with fine longitudinal veins which are rather pale in color; crossveins thicker and distinctly dark, comparatively few in number, especially in the basal area, only two or three on costa before the bulla, where there is a group of four or five; below this the cross veins of the radial sector and median areas form an irregular line across the wing, preceded by long elongate cells; a ruddy shade apically between veins 2 and 3, scarcely extending to costa. Length of body 5 mm.; of forewings 6 mm.

Holotype—♂, Alton, Ill., Aug. 27, 1913; in Collection Natural History Survey, Illinois, Urbana, Ill.

Paratypes—3 ♂, same data; 1 ♂, Urbana, Ill., June 14, 1887 (C. Hart). Two of these are in the Canadian National Collection, Ottawa.

The pale color, small size and dark crossveining of primaries distinguish the species from *simplex* Walsh as described. The forelegs of all the specimens before me are unfortunately lacking but the characteristic L-shaped penes lead one to believe that the species will probably fall into *Ecdyonurus* with first tarsal joint of male forelegs about half the length of the second.

NEW SPECIES OF BOLBOCEROSOMA (SCARABAEIDAE)

BY R. W. DAWSON AND J. W. MCCOLLOCH

Lincoln, Neb.

The generic name *Bolbocerosoma* was proposed by Mr. Schaeffer in 1906 (Trans. Amer. Ent. Soc., XXII, pp. 250-254) to take care of the species *Scarabaeus factus* Fabricius and its supposed synonym *tumefactus* Beauvois. Oddly enough, the misgivings of M. Beauvois, recorded more than a century ago, that his species was "perhaps only a climatic variation" have been shared by all subsequent writers, and three additional forms have, doubtless, on this account failed to receive recognition. After carefully studying between two and three hundred specimens, the writers cannot concur in the opinion of Mr. Schaeffer that "intermediates" occur, and that, therefore, the differential characters are unstable and valueless. It is true that an occasional specimen will deviate somewhat from the average color pattern of its species, but such specimens can in every instance be readily determined by the examination of the constant structural and genital characters diagnostic of the species.

For the privilege of studying the series of specimens recorded in this paper, the writers are much indebted to the never-failing courtesy and generosity of the following gentlemen: N. Banks, C. S. Brimley, K. F. Champlain, J. J. Davis, G. A. Dean, C. A. Frost, W. Knaus, H. P. Loding, C. E. Mickel, J. G. Sanders and H. F. Wickham.

COMPARISON WITH ODONTAEUS

1. *Mesosternum* strongly elevated between and in front of the middle coxae, which are narrowly separated by a metasternal process extending forward.

- and uniting with the mesosternal prominence *Bolbocerosoma*
 Mesosternum not elevated between and in front of the middle coxae; the
 coxae nearly or quite contiguous *Odontaeus*

SYNOPSIS OF BOLBOCEROSOMA

1. Second elytral stria deep, strongly punctured like the others 2
 Second elytral stria obsolete or very incomplete, never deep and strongly
 punctured like the others 3
2. Distal, black area of elytra confluent with the black, sutural stripe, and
 usually distinctly separated from the lateral margins of the elytra; pronotum
 never with a central black spot *bruneri*
 Black area of elytra entirely separated from the black, sutural stripe, more
 broadly so apically, and in the form of an oblique, oval spot, contiguous
 to, to confluent with, the black lateral margins; pronotum usually with
 a central black spot which is often extended into a broad, more or less
 interrupted, longitudinal stripe *tumefactus*
3. Size small, length 6-9 mm., stria punctures of elytra bearing fine, rather
 long, erect, yellow hairs, second stria obliterated, or at most indicated by
 two or three feeble punctures *pusillum*
 Size larger, length 10-13 mm., stria punctures not setigerous, second stria
 feeble and incomplete but rarely if ever obliterated 4
4. Elytra with a very large distal black area always confluent with the sutural
 stripe in its apical half, and with the black lateral margin throughout
 most or all of its length *fartus*
 Elytra with a slightly postmedian, oval, black spot, separated by approxi-
 mately its own width from both the sutural stripe and the lateral margins,
 which are at most only partially blackened postmedially *biplagiatum*

***Bolbocerosoma fartus* Fabricius.**

1775. *Scarabaeus fartus* Fabricius, Systema Entomologiae, p. 14 (♂).

1775. *Scarabaeus cephus* Fabricius, Systema Entomologiae, p. 18 (♀).

Length 10-12 mm., greatest width 7-8 mm. Color, Sanford's brown to mahogany red, marked as follows: broad, posterior border of pronotum between the elytral humeri, scutellum, extreme base of elytra, sutural intervals, lateral margins and a very large, oblique, oval area always united with the sutural stripe and more or less coalescent with the marginal stripe sometimes clear to the elytral humeri, black. The large black area may or may not suffuse the small subapical area inside of the black margins, in the latter case this area appears as an oval brown spot on the black ground. Pronotum with a variable amount of black marking in the median, frontal declivity; head varying from brown to black.

Median, anterior, pronotal modification but little more strongly developed in the male than in the female; upper, limiting, transverse carina broadly and feebly emarginate medially (♂), evenly arcuate (♀), lateral limiting grooves and dentiform carinae only moderately strong (♂), feebly developed but distinct (♀). Entire discal area of pronotum very coarsely, irregularly punctured, especially in the male, and with a very fine but usually distinct secondary puncturation. Sides of pronotum, especially anteriorly, becoming much less coarsely and very densely punctured.

Elytral striae deep, strongly and coarsely punctured; second stria indicated basally by a feebly and imperfectly depressed line and 6-12 small, shallow punctures, fifth stria of a similar character but traceable for its full length, eighth stria scarcely or not at all impressed, consisting of a line of small, feeble punctures often evanescent basally.

Mesosternal prominence in front of the middle coxae not strongly developed, elevated but little if any above the plane of the metasternum and usually discernible with difficulty because of the dense, shaggy, yellow hairs clothing the legs and under parts.

Anterior tibiae with seven to nine external teeth, but most frequently with eight.

Genital armature of male with the claspers triangular in outline, with the free outer sides nearly straight, and slightly longer than the moderately oblique basal margins.

Specimens examined: 14 ♂, 12 ♀.

No data: 5 ♂, 1 ♀. MARYLAND: "Md.," 2 ♂, 3 ♀. WASHINGTON, D.C.: "D.C.," 1 ♀. VIRGINIA: Falls Church, 1 ♂, 4 ♀. NORTH CAROLINA: Raleigh, 2 ♂, 2 ♀; Hillsboro, 1 ♂; Ashville, 1 ♂. FLORIDA: Orlando, 1 ♂. ALABAMA: Mobile Co., 1 ♂, 1 ♀; Magazine Point, 1 ♂.

***Bolbocerosoma pusillum* new species.**

Length 6-9 mm., width 4-6.5 mm. Color, mahogany red, sometimes lighter to Sanford's brown, marked as follows: head, lateral concavities of pronotal declivity, posterior border of pronotum between the elytral humeri, scutellum, extreme base of elytra, sutural intervals and a large, subapical spot very generally coalescent with the sutural stripe, black. Extent of subapical, black spot rather variable, sometimes suffusing the entire apical half of the elytron, frequently more or less separated from the lateral margin of the elytron, sometimes entirely so and showing a tendency to become disconnected from the sutural strip. As in *farctus* there is a tendency for the apical umbone to remain red even on heavily marked specimens.

Anterior pronotal modification of the male rather variable in its degree of development in the more strongly developed specimens resembling that of *biplagiatus* and in the less developed ones approaching that of *farctus*. Discal area of pronotum with coarse, sparse and irregularly distributed puncturation, especially in the male, secondary puncturation usually very fine and inconspicuous. Puncturation of sides of pronotum fine and very dense.

Second elytral stria obsolete, or indicated basally by one or two punctures or a barely visible, depressed line; fifth stria feebly impressed, indicated by a line of variable punctures always small and feeble basally but with a tendency to become stronger distally. Strong punctures of normal striae bearing erect, yellow hairs.

Mesosternum very feebly developed in front of the middle coxae, not elevated above the metasternum and frequently discernible with difficulty. Meso- and metasterna sometimes brown but usually clouded with piceous, and frequently black.

Anterior tibiae usually with seven external teeth, sometimes with eight or rarely with the number reduced to six.

Genital armature resembling that of *farctus*, but with basal line of the claspers more strongly emarginate and the tips of the claspers much more strongly deflexed.

Type: ♂, Riley Co., Kansas, August 12, 1901 (Popenoe) Ac. No. 1181 (In collection of Department of Entomology, Kansas Agricultural College.)

Allotype: ♀, Riley Co., Kansas, July 11, 1902 (G. A. Dean) Ac. No. 1553. (In collection of Department of Entomology, Kansas Agricultural College.)

Paratypes: 7 ♂, 10 ♀: KANSAS: "Kansas," 1 ♂; Wallace Co., 1 ♀; Manhattan (Mt. Prospect) 5 ♂, 3 ♀. TEXAS: Dallas, 2 ♀; Amarillo, 3 ♀. NEW MEXICO: Clovis, 1 ♂. COLORADO: "Col.," 1 ♀.

***Bolbocerosoma biplagiatum* new species.**

Length 10-13 mm., width 7.5-9 mm. Color, Sanford's brown to mahogany red, the lighter shade prevailing, marked as follows: head, lateral excavations of pronotal declivity, basal margin of pronotum, between the elytral humeri, scutellum, sutural intervals and a moderate-sized, oval, median to slightly post-median spot, black. The spot varies from round to elongate oval in form, lies parallel to the striae and is separated from both the sutural stripe and the usually unadorned side margins of the elytra by nearly its own width. A trifling, though apparently useful differential character, is the median, dentiform point of the front margin of the basal black border of the pronotum.

Anterior, pronotal modification of male less highly developed than that described for *tumefactus* and *bruneri* but much stronger than in *farctus*, the transverse carina very distinct medially, the extremities less elevated than in *bruneri* and with their sub-basal impressions feeble to obsolete. Lateral limiting concavities pronounced but not deep as in *bruneri*. Pronotal declivity and front of head distinctly more polished and shining and much less closely punctured than in any of the other species. Pronotal declivity in the female of the usual type. Characteristic secondary puncturation of pronotum sometimes distinct in the female but usually limited, inconspicuous and frequently obsolete in both sexes.

Second stria very feebly impressed, often abbreviated to about twice the length of the scutellum and with only a few weak variable punctures; fifth stria attaining the usual length, but very feebly impressed and only moderately punctured, often partially evanescent in its basal third; eighth stria usually not at all impressed but represented by a line of variable punctures, very feeble basally but sometimes well marked distally.

Mesosternal prominence in front of the middle coxae only moderately and sometimes scarcely at all upturned to form a tooth-like process as seen in *bruneri*. Hair of under side not dense. Anterior tibiae with seven or sometimes eight external teeth.

The genital armature of the male resembles that of *farctus* but is relatively much smaller and slenderer, the basal margins of the claspers straighter and less oblique, and the tips of the claspers more deflexed, but less strongly so than in *pusillum*.

Type: ♂, Oxford, Nebraska, June 4, 1918. (Collection of Department of Entomology, University of Nebraska.)

Allotype: ♀, Seward Co., Kansas (Lantz). (Collection of Department of Entomology, Kansas Agricultural College.)

Paratypes: 6 ♂, 8 ♀:

No data: 2 ♀. KANSAS: "Kansas (?)," 3 ♂, 3 ♀; Lincoln Co., 1 ♂. ARKANSAS: Rogers, 1 ♀. WISCONSIN: Trout Lake, Vilas Co., 1 ♂. TEXAS: Dallas, 1 ♂, 2 ♀.

***Bolbocerosoma tumefactus* Beauvois.**

1805. *Scarabaeus tumefactus* Beauvois, Insects recueillis en Afrique et en Amerique, p. 91, pl. 2, fig. 6.

Length 8-11 mm., width 5.7-8 mm. Color, raw sienna to amber brown, sometimes darker, approaching mahogany red, marked as follows: head, central pronotal spot often developed into a broad longitudinal stripe more or less interrupted apically and sub-basally, posterior border of pronotum between the elytral humeri, scutellum, extreme base, sutural intervals and lateral margins of elytra and a moderate sized, oval, oblique, anteriorly pointed spot usually well separated (one and one-half to three intervals) from the sutural stripe, but contiguous to, or confluent with the marginal stripe, black.

Median, anterior, pronotal modification very much more strongly developed in the male than in the female; upper, limiting, transverse carina thick, nearly obliterated medially by a deep emargination, the lateral extremities developed into pyramidal elevations, further emphasized by shallow, sub-basal depressions (♂), unmodified and evenly arcuate (♀), lateral limiting grooves and dentiform carinae strong, the grooves deeply excavated (♂), feeble to subobsolete (♀). Discal area of pronotum coarsely, sparsely and irregularly punctured, especially in the male, with a fine, relatively close secondary puncturation often becoming conspicuous in the female. Puncturation finer and denser toward the sides, especially at the anterior angles, but less strikingly so than in *farctus*.

Elytral striae strong, but much less pronounced than in *farctus*, their punctures distinctly smaller and more numerous, the interspaces narrower and less convex. The second and fifth striae and even the eighth in its distal half similar in strength to the others.

Mesosternal prominence in front of the middle coxae moderately developed and slightly elevated apically, usually discernible with little difficulty through the distinctly finer and thinner covering of hairs on the legs and under surface than seen on *farctus*.

Anterior tibiae usually with seven, but sometimes eight external teeth.

Genital armature of male differing at a glance from that of *farctus*, claspers only subtriangular in form, bluntly rounded at the apex, externally arcuate in their free apical two-fifths and nearly straight in the basal three-fifths, surface finely punctate. The degree to which the claspers set into the median apical portion of the stalk of the armature is very different from that of all the other species except in *bruneri*.

Specimens examined: 20 ♂, 11 ♀:

No data: 2 ♂, 2 ♀. CONNECTICUT: Hamden, 1 ♂; Lyme, 1 ♀. PENNSYLVANIA: "Pa.," 3 ♂, 1 ♀; Butler, 1 ♀; Charter Oak, 2 ♂, 1 ♀; Cone-wago, 2 ♂, 1 ♀; Harrisburg, 1 ♂; Inglenook, 1 ♀; Rockville, 1 ♂, 1 ♀. NEW JERSEY: "N. J.," 1 ♂. MARYLAND: "Md.," 1 ♂; Chesapeake Beach, 1 ♂. VIRGINIA: Falls Church, 1 ♂, 1 ♀; Glencarlyn, 1 ♀. NORTH CAROLINA:

"N. C.," 1 ♂; Blowing Rock, 1 ♂; Waynesville, 1 ♂. ALABAMA: Tumblin Gap, 1 ♂.

***Bolbocerosoma bruneri* new species.**

1910. *Bolbocerosoma farctum* Blatchley (not Fabr.) Coleoptera of Indiana, p. 937.

Length 10-13 mm., width 6.5-9.5 mm. Color, mahogany red to amber brown, marked as follows: head largely and always basally, basal margin of pronotum between the elytral humeri, scutellum, extreme base of elytra, sutural intervals, a lateral dash below the humeri more or less extended into an attenuated lateral stripe, and a large subterminal spot always confluent with the sutural stripe in its apical two-fifths and almost always distinctly separated from the lateral margin, black. The markings thus recall those of *farctus* but differ constantly by the less extended, oblique, distal black area being nearly straight anteriorly instead of distinctly arcuate, and never produced to coalesce with the sub-humeral, abbreviated black dash. Median, frontal declivity of pronotum with a minimum of piceous markings, confined to the elevated points and a slight clouding of the deep, longitudinal impressions (♂), or to the transverse carina (♀).

Pronotal modification much more strongly developed in the male than in the female, resembling that described for *tumefactus*, but differing in the male from that species as follows: upper limiting elevation of declivity noticeably thinner and more distinctly cariniform, more clearly defined medially, and with the elevated extremities more widely separated. Transverse pronotal carina of female unmodified, evenly arcuate and longer than in *tumefactus*. Coarse punctures of pronotal disk distinctly more numerous and less irregularly placed than in either *farctus* or *tumefactus*. Punctuation as in *farctus* becoming fine and very dense in the anterior angles. Fine secondary punctuation microscopic (in some males) to very distinct in most females.

Elytral striae strong, deep and uniformly developed, except the basal part of the eighth; punctures of moderate size, smaller than in *farctus* and more closely placed. Intervals narrow as in *tumefactus* but more strongly convex than on *farctus*.

Mesosternal prominence in front of the middle coxae rather strongly developed, concave on its anterior face and distinctly elevated above the plane of the metasternum. Shaggy hair of legs and under surface much less abundant than on *farctus*.

Anterior tibiae with eight external teeth, rarely varying to seven or nine.

Genital armature of male resembling that of *tumefactus*.

Type: ♂, Fairmont, Nebraska, June 27, 1912 (G. W. Deming). (Collection of Department of Entomology, University of Nebraska.)

Allotype: ♀, Maskell, Dixon Co., Nebraska, June 23, 1912 (E. G. Anderson). (Collection of Department of Entomology, University of Nebraska.)

Paratypes: OHIO: "Ohio," 1 ♂. ILLINOIS: "Ill.," 1 ♂, 2 ♀; "N. Ill.," 1 ♀; Chicago, 1 ♀; Ogle Co., 1 ♂, 1 ♀; West Northfield, 1 ♀. INDIANA: La Fayette, 1 ♂; Marion Co., 2 ♀. IOWA: "Iowa," 2 ♂, 1 ♀; Cedar Rapids, 1 ♀; Cherokee, 1 ♂; Clear Lake, 1 ♂; Crawford Co., 3 ♂; Dallas Co., 1 ♀; Farmersburg, 1 ♂; Iowa City, 1 ♂, 3 ♀; Independence, 2 ♂; Spirit Lake, 1 ♀. MINNESOTA: "Minn.," 4 ♂, 2 ♀; Austin, 1 ♂, 1 ♀; Bird Island, 1 ♀; St. Paul, 2 ♂, 2 ♀. SOUTH DAKOTA: Volga, 1 ♂. NEBRASKA: Carns, 1 ♀; Fairmont,

5 ♂, 3 ♀; Humphrey, 1 ♀; Lincoln, 9 ♂, 6 ♀; Louisville, 1 ♀, Malcom, 1 ♀; Maskell, 3 ♀; Omaha, 2 ♂; Rulo, 1 ♀; Sowbelly Canyon, Sioux Co., 1 ♂. KANSAS: "Kansas," 10 ♂, 9 ♀; McLouth, 1 ♀; Dodge City, 1 ♂; Riley Co., 5 ♀, 8 ♂. CANADA: Woburn, Manitoba, 1 ♂.

DESCRIPTIONS OF TWO CANADIAN BEES OF THE GENUS MELECTA*

BY HENRY LORENZ VIERECK

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Melecta sladeni new species

Female. Length 13 mm.; superficially like *M. miranda* Fox but with the scutel armed as in *M. interrupta* Cresson; compared with the original description of *M. miranda* Fox this species further differs as follows:—Vertex between ocelli and eye margin with a patch of dark hairs, vertex back of ocelli with some dark hairs, joint 3 of antennae: 4 :: 9 : 7.5, lower half of mesopleura mostly with blackish hairs, tibiae with brownish hairs except for a band of whitish hairs near the middle and at apex, wings brownish, the median cell darker than the submedian, a dark brown stain at apex of marginal cell, another dark brown stain extending from the outer edge of the first submarginal cell to near the outer edge of the third submarginal cell, another dark brown stain at the outer end of the third discoidal cell.

Holotype—♀, Summerland, B. C., Aug. 9, 1916 (F. W. L. Sladen); No. 632, in the Canadian National Collection, Ottawa.

A variety with blackish frontal hairs is also in the Canadian National Collection from Westbank, B.C., July 20, 1919 (E. R. Buckell).

Melecta (Pseudomelecta?) suffusa new species

Female. Length 7 mm.; presumably related to *M. maculata* Cress. from the original description of which it differs as follows:—Dorsulum and scutel not confluent punctured throughout, scutel hardly bilobed, medially barely lower than on each side, tegulae dark amber color, marginal cell not fuliginous, legs pubescent much the same as in *M. sladeni* Vier.; abdomen suffused with a whitish color due to appressed pubescence except in the centre of the first tergite, along the base of the following tergite in the middle and four small spots at apical edge of second, third and fourth tergites where there is brownish appressed pubescence of the same structure as the pale pubescence adjoining.

Pygidium with a few punctures, shiny, carinate down the middle and sloping off to each side. Agrees with Ashmead's definition of *Pseudomelecta* Rad. except in the structure of the scutel. Labial palpi four-jointed, maxillary palpi one-jointed, nearly 126 μ long, first joint of labial palpi nearly 798 μ long, the second 252 μ , the third 126 μ and the fourth or end joint 84 μ long.

Holotype—♀, Medicine Hat, Alberta, Aug. 20, 1916 (F. W. L. Sladen); No. 653, in the Canadian National Collection, Ottawa.

Paratype—♂, same locality, Aug. 22, 1916 (F. W. L. Sladen).

*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agric., Ottawa, Ont.

ON THE SYNONYMY OF THE MONARCH BUTTERFLY (DANAIDAE, LEPID.)

BY WM. BARNES & F. H. BENJAMIN,

Decatur, Ill.

Danaus menippe Hubner

1816. Hbn., Verz., p. 16, *Anosia*.

1906?, Kirby, Add. Notes, Wyt. Ed. Hbn. Samml. Exot. Schmett., p. 4, *Anosia*.

plexippus Linnaeus (partim.)

1758. Linn., Syst. Nat., Ed. X, p. 471, (partim. cit. Catesby, nec descr.), *Papilio* (*Danaus*).

1779. Cram., Pap. Exot., III, 24, pl. CCVI, ff. E and F, *Papilio*.

1816. Hbn., Verz., p. 16, *menippe*. *Anosia*.

archippus Fabricius (homonym)

1793. Fab. (nec Cram.), Ent. Syst., III, (1), 49, *Papilio*.

1816. Hbn., Verz., p. 16, *menippe*, (*archippus* Fab. nec. Cram.), *Anosia*.

1916. B. & McD., Contr. Nat. Hist. Lep. N. A., III, (2), 69, *Danus*.

A letter from Dr. J. McDunnough called attention to the fact that the synonymy of the common Monarch butterfly is still a puzzling problem. On page 16 of the Verzeichniss, Hubner renames *archippus* Fabricius *menippe* (No. 86); No. 84 being *archippe* (= *archippus* Cramer); No. 84-89 being placed in the genus *Anosia*. While Hubner does not definitely state that *archippus* Fabricius is a homonym of *archippus* Cramer, the reason for his action is obvious. Hubner never states in the Verzeichniss why he erects a new name for an old species. (See B. & Benj., Contr. Nat. Hist. Lep. N. A., V., (2), 62-64 for a similar case *Mitoura gryneus* vs. *damon*). Furthermore, *archippus* Fabricius was a homonym, when proposed, of *archippus* Cramer, both species being originally described in the genus *Papilio*. (See International Rules Zool. Nomencl., Art. 35 & 36). Therefore, the name *archippus* Fabricius is unavailable. Barnes and McDunnough (1916) have already shown that the name *plexippus* should not be used for the North American insect. The name *menippe* Hubner becomes valid in the place of *archippus* Fabricius (homonym) and *plexippus* Linnaeus, partim (nec descr.).

The status of the name *megalippe* Hubner (1823?, Samm. Exot. Schmett., pl. CCXX, ff. 1-2, *Anosia*), listed by Barnes and McDunnough (1917, Check List) as a synonym of *archippus*, seems open to dispute. Seitz (1908, Macrolepid., Sect. I, Vol. I, 76) erroneously assigns the name *plexippus* Linnaeus to the North American insect, listing as synonyms "*archippus* F., *erippus* Cr., *megalippe* Hbn., *menippe* Hbn." Haensch (1909, in Seitz, Macrolepid., Sect. II, Vol. V, 113) uses the name *archippus* Fabricius but does not mention either *menippe* or *megalippe*; a palpable omission, under other species synonymy being given. Fruhstorfer, (1910, in Seitz, Macrolepid., Sect. II, Vol. IX, 193) uses the name *archippus* Fabricius, listing as a synonym "*menippe* Hbn.," but *megalippe* Hubner is not mentioned. Kirby, (1906?, see bibliography above), speaking of *megalippe*, states: "This species is the southern representative of the North American *A. menippe* Hubner, (*A. plexippus* and *A. archippus*, of various authors, but not of Linne nor Cramer)." According to the characters given by Haensch to separate *archippus* from other American species, the name *megalippe* would be a synonym of *menippe* (*archippus*); but because of the conflicting bibliography the status of the name should be questioned until definitely established by someone possessing long series of South American Danaidae.

ON TWO SPECIES OF MAYFLIES OF THE GENUS *HEPTAGENIA*

BY W. A. CLEMENS AND A. K. LEONARD,

Department of Biology, University of Toronto.

Among the *Ephemeridae* which the senior author reared at Ithaca, N.Y., from 1913—1915, were two very common species of the genus *Heptagenia*. The nymphs of both of these species are described by Needham in Bulletin 86, N. Y. State Museum, and figured in plate 9. Extensive rearings, about 50 in all, show, however, that the nymph described as *Heptagenia* sp. 3 and illustrated in Fig. 4 of plate 9, is that of *Heptagenia interpunctata*, while the nymph described for that species and illustrated in Fig. 3 of plate 9 appears to belong to a new species which we here describe.

***Heptagenia ithaca* sp. nov.**

Nymph: The description by Needham (loc. cit.) is quite complete. The markings on the ventral surface of the abdomen are very distinctive.

Imago: Male (dried specimen). Body length 9 mm. Rather uniformly brown in colour. Brownish area on face extending from antenna to ventral margin of carina. Abdomen brownish with the posterior margins of the segments very dark dorsally. Stigmal dots not marked. Penis lobes L-shaped as in *H. tripunctata*. Wings hyaline, slightly clouded in the pterostigmatic space. Femora banded at middle and at distal ends; tibio-tarsal joints dark.

Female: Similar to male.

Holotype—♂, Ithaca, N.Y., June 24, 1913, (W. A. Clemens), in the collection of the senior author.

Allotype—♀, Ithaca, N. Y., June 28, 1923, (W. A. Clemens), in the collection of the senior author.

Paratypes in the collection of the senior author.

***Heptagenia interpunctata* Say.**

Nymph: The nymph is fully described (as species number 3) by Needham (1905). It is very similar to the nymphs of *H. canadensis* and *H. frontalis*. In all three species there is more or less of a dorsal longitudinal striping on the abdomen and all possess oval pointed gills and certain characteristic features in the mouth parts (Clemens, 1913).

Imago: The imago is described in detail by Eaton (1888) and by Needham (loc. cit.).

This species is very close to *H. canadensis* and it is not unlikely that the two species should be considered as varieties rather than as distinct species. *H. canadensis*, as pointed out by Banks (1910), is typically a dark northern form, while *H. interpunctata* is a lighter form of more southern distribution. We have specimens of the former from Lake Nipigon and a few from Ithaca, N. Y. The undetermined nymph described by Clemens (1913) and there illustrated in Fig. 4, plate V, is undoubtedly that of *H. interpunctata*. The present known range of this species then is from Georgian Bay and Sherbrooke, Que., in the north, to Virginia and North Carolina in the south.

LITERATURE.

Banks, Nathan, 1910. Notes On Our Eastern Species of the Mayfly Genus *Heptagenia*. Can. Ent., Vol. XLIII, No. 6.

Clemens, W. A., 1913. New Species and Life Histories of *Ephemeridae* or Mayflies. Can. Ent., Vol. XLV, No. 8.

Eaton, A. E., 1888. Rev. Monog. Recent *Ephemeridae* or Mayflies. Trans. Linn. Soc., 2nd series, Vol. III, Zool.

Needham, J. G., 1905. Mayflies and Midges. N. Y. State Mus. Bull., No. 86.

A CONTROVERSIAL NOTE ON SOME SPECIES OF LYGAEUS (HEMIPTERA, LYGAEIDAE)¹

BY H. M. PARSHLEY,

In a brief note mentioning a few species of *Lygaeus*,² Mr. Van Duzee suggests that I may have misidentified *L. kalmii* Stal in my paper on the distribution and forms of that species³, but the basis for this notion remains obscure, since our senior hemipterist contents himself with a series of *ex cathedra* statements devoid of argument or documentation. He surmises quite correctly that I followed Stal in my identification of the species concerned—and why not? Stal's work⁴ is clear and, for aught we know to the contrary, perfectly sound. Moreover, in the most recent monograph of the genus⁵, Barber reaches conclusions in harmony with Stal's fundamental treatment and my later elaboration⁶. In Mr. Van Duzee's little note all this previous work is ignored and we are favored with a series of bare propositions, which, if they have a certain value as expressions of the author's revolutionary opinions, are nevertheless in conflict with the evidence, I believe, and hence to be rejected. Let us consider these propositions one by one.

"*Lygaeus turcicus* Fabr. is a Mexican form which spreads well over our southern states . . ." In connection with his original description⁷ Fabricius gives the habitat of this species as New York, and it is now well known to occur in New England, South Dakota, etc., as well as farther south. Apparently all are agreed on the identity, if not on the distribution of this form.

L. costalis H.-S. is next considered and the name resuscitated because *reclivatus* is to be used a little later for something else.

In "*Lygaeus reclivatus* Say . . . the clavus is black . . ." This is the *kalmii* of Dr. Parshley's paper . . ." Here we have a new and strange assignment of these well known names. Say's original description of *reclivatus*⁸ speaks of a minute black spot at the inner basal angle of the hemelytra, which, interpreted with due regard to the optical equipment of that time, means in Stal's words: "clavus igitur rufus, pone medium niger vel nigro-maculatus." The name *reclivatus* has therefore been held, up to the present, to apply to a common south western form with red clavus, very wide hemelytral red bands, and distinct habitus, and there is no evident reason for assigning this name to *kalmii* subsp. *kalmii*. It is futile in the absence of type specimens to attempt the reassignment of Say's names by fiat. Sound argument, dispelling all doubt, is especially desid-

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1.—Contributions from the Department of Zoology, Smith College, No. 113.

2.—Can. Ent., LV:214, 1923.

3.—Can. Ent., LV:81-84, 1923.

4.—Enum. Hem., 4:107, 1874.

5.—Proc. Ent. Soc. Washington, XXIII:63-68, 1921.

6.—Hem. Western Canada, Occas. Papers Mus. Zool. Univ. Michigan, No. 71:14, 1919.

7.—Syst. Rhyng., 218, 1903.

8.—Compl. Writings, II:245-246, 1859 (1825).

erate in this particular field of nomenclatural revision.

Finally, the name *kalmii* is bestowed by Van Duzee exclusively upon the eastern form otherwise known as *kalmii* subsp. *angustomarginatus* Parsh., with the further suggestions: (1) that after all it might be better to drop *kalmii* altogether (as a synonym of *reclivatus*), thus proposing two species—an eastern *L. angustomarginatus* and a western *L. reclivatus*; and (2) that on third thought Say's *enotus* (proposed as a Mexican variety of *reclivatus*!) should perhaps be used for the eastern form. After untangling all this what remains is a feeling of disappointment that Mr. Van Duzee can thus advance an unsupported dictum which is in flat contradiction with the results of my distributional study. Apparently he has failed to grasp the meaning of the facts elicited by examination of very extensive materials—data which seemed to show that the eastern and western forms of *kalmii* do not constitute two distinct species, but represent, on the contrary, races or subspecies in the strict sense, as understood by students of vertebrate zoogeography. This matter is fully argued in my paper referred to at the beginning of this rejoinder, and if there are grounds for a different interpretation they should be brought forth into the light.

In advocating the restriction of the name *kalmii* to the eastern form Mr. Van Duzee says that "Stal does not indicate which of his three varieties he considers typical". But in the original description we find "membranæ limbo angusto maculisque duabus interdum obsoletiusculis basalibus albidis" (italics mine), while the unspotted variety is mentioned last; and moreover the form with spotted membrane (western) has already been definitely designated as typical and so accepted by various authors.

In conclusion let us list these disputed forms in parallel columns and thus leave the matter, awaiting with interest some statement of fact and argument in support of Mr. Van Duzee's contentions.

| Arrangement based on published data. | Arrangement proposed by Mr. Van Duzee |
|-------------------------------------------------------------|------------------------------------------|
| <i>L. turcicus</i> Fabricius | <i>L. turcicus</i> Fabricius |
| <i>L. reclivatus</i> Say, Stal, Barber | <i>L. costalis</i> H.-S., Van Duzee |
| var. <i>enotus</i> Say, Barber (= <i>costalis</i> H.-S.) | |
| <i>L. kalmii</i> Stal, Barber, Parshley | |
| subsp. <i>kalmii</i> Stal, Parshley | <i>L. reclivatus</i> Van Duzee, nec Say. |
| (=vars. <i>a</i> and <i>b</i> of Stal) | |
| subsp. <i>angustomarginatus</i> Parshley | <i>L. kalmii</i> Stal, Van Duzee |
| (=var. <i>c</i> of Stal) | ? <i>angustomarginatus</i> Parshley |
| | ?? <i>enotus</i> Say, Van Duzee |

PRODROMUS OF ANDRENA, A GENUS OF BEES

BY HENRY LORENZ VIERECK,

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Owing to the magnitude of a classification of Pan American bees of the genus *Andrena* consisting of over 600 species, publication in the near future cannot be promised. Consequently, I venture to make known the following key to

*Contribution from Division of Systematic Entomology, Entomological Branch, Dept. of Agric., Ottawa, Ont.

all the subgenera, of this genus, of the world, together with descriptions of new species chiefly from the Boreal Region and the Transition of the Austral Region.

It is hoped that the keys here offered will be tested by students of these bees and that as a result the ultimate classification will be as practical as possible.

Unless otherwise stated in the key the fore wings have three sub-marginal cells¹ bounded on every side by a distinct vein, and the mouth parts and tibioscopal hairs are virtually typical, i. e., as in *Andrena helvola* L.

KEY TO SUB-GENERA OF THE WORLD.

1. Mesopleura not almost conically produced but rounded 2
 Mesopleura almost conically produced or angular *Gonandrena*
2. Facial line shorter than the transfacial line 3
 Facial line as long as or longer than the transfacial line, apical half of second tergite depressed distinctly less than half the distance from base to apex of second tergite down the middle; fore wings normally with three submarginal cells *Conandrena* new subgenus
 Type—*Andrena bradleyi* Vier.
3. Malar space distinctly developed, with its elevated part, in the middle, much longer than its depressed part 4
 Malar space virtually wanting or with its elevated part, in the middle, distinctly shorter or, at most, a little longer than its depressed part 5
4. Anterior trochanter in male with an almost spine-like process at apex beneath; apical half of second tergite depressed less than one-half the distance from base to apex of second tergite down the middle of this tergite; female with average length of third joint of antennae nearly as long as the average length of the next three joints combined; enclosure not rugose; fovea virtually wanting, fovea not extending below the antennal line and two-thirds or less than two-thirds as wide as the ocellocular line is long
 *Dactylandrena* new subgenus
 Type—*A. (D.) maura* Vier. n. sp.
- Anterior trochanter in male simple *Conandrena*
5. Apical half of second tergite depressed, distinctly less than half the distance from base to apex of second tergite down the middle; glossa and labial palpi approximately typical except as hereinafter otherwise mentioned; fore wings normally with three submarginal cells except where stated to the contrary in the following 6
 Apical half or a little less or more than apical half of second tergite, depressed, if the depression extends to a little less than the apical half then the enclosure is coarsely rugose and the sculpture of the rest of the body is very coarse; glossa and labial palpi approximately typical; fore wings normally with three submarginal cells, most tibioscopal hairs simple, not branched 15
6. Females 7
 Males 16
7. Average length of third joint of antennae as long as or longer than average length of fourth and fifth joints combined 9

1.—In aberrations of the 3-celled type having only 2 cells, the 2nd abscissa of the cubitus is usually nearly as long as the first transverse cubitus.

- Average length of third joint of antennae distinctly less than average length of fourth and fifth joints combined 8
8. Wings with 2 submarginal cells *Scapter*
Wings with 3 submarginal cells *Scapteropsis*
9. Branched hairs predominating in the scopa 10
Simple hairs predominating in the scopa 11
10. Fore wings normally with two submarginal cells *Parandrena*
Fore wings normally with three submarginal cells *Ptilandrena*
11. Forewings normally with three enclosed submarginal cells 12
Fore wings normally with but two submarginal cells *Parandrena*
12. Cheeks not keeled 13
Cheeks keeled *Tropandrena* n. subg.
Type—*A. fragilis* Sm.
13. Glossa and usually palpi not attenuated 14
Glossa and palpi attenuated, pubescent *Iomelissa*
14. Hind tibiae obviously less than twice as wide at apex as the hind metatarsi are wide at base *Andrena*, s. s.*
Hind tibiae obviously twice as wide at apex as the hind metatarsi are wide at base *Platandrena* n. subg.
Type—*A. nasoni* Rob.
15. Males 16
Females; joint 3 at most hardly longer than joints 4+5 *Trochandrena*
16. Enclosure not coarsely rugose throughout; joint 3 longer than 4 19
Enclosure coarsely rugose throughout; joint 3 shorter than 4, at most a little longer than 4 17
17. Wings with 2 submarginal cells *Scapter*
Wings with 3 submarginal cells 18
18. Clypeus yellow *Andrena*
Clypeus not yellow *Scapteropsis* and *Trachandrena*
19. Palpi attenuated 20
Palpi not attenuated 21
20. Fore wings normally with three submarginal cells *Iomelissa*
Fore wings normally with two submarginal cells *Parandrena*
21. Cheeks not keeled 22
Cheeks keeled *Tropandrena*
22. Cheeks with a rounded angle 23
Cheeks without a rounded angle 25
23. Fore wings normally with two submarginal cells or usually with the second abscissa of the cubitus distinctly shorter than the first transverse cubitus 24
Fore wings normally with three submarginal cells, if with two only then with the second abscissa of the cubitus nearly as long as the first transverse cubitus *Andrena* s. s.
24. Abdomen with clean cut punctures; sculpture coarse *Trachandrena*
Abdomen without clean cut punctures *Parandrena*
25. Hind tibiae at apex less than twice as wide as basal joint of hind tarsi at base 26

*Here, too, probably runs out *Rediviva*.

- Hind tibiae at apex at least twice as wide as basal joint of hind tarsi at base *Platandrena*
 26. Wings normally with two enclosed submarginal cells *Parandrena*
 Wings normally with three enclosed submarginal cells *Andrena* s. s.

***Andrena (Andrena) bella* new species**

Presumably related to *A. (A.) ribifloris* Ckll.

Female. Length 10 mm.; body black, mostly covered with pale ochreous and reddish hairs, head covered with ochreous hairs except as follows, fovea filled with dark seal brown hairs, front, margin around foveae and eyes and temples along the upper edge of the eye with black hairs, clypeus with black hairs save at base, face indistinctly reticulate, with indistinct punctures that are as many as three or more puncture widths apart, clypeus slightly elevated above the apical margin, convex, sculptured like the face except that the punctures are larger and well defined, clypearea wanting, clypeus thinly hairy, its sculpture almost hidden by hairs, labrarea submarginate or truncate, labrum with a median longitudinal welt between the labrarea and apical edge of labrum, antennae blackish throughout, mandibles typical, robust, palpi nearly typical; thorax above covered with an abundance of reddish hairs which are seemingly shorter than the ochreous and black hairs on the mesopleura, mesopleura with ochreous hairs on the upper half and black hairs on the lower half, scutell hairy and sculptured much like the dorsulum, legs blackish except for the small joints of the tarsi which are more or less brownish, covered with blackish hairs except on the fore and hind femora, hind trochanters and hind tibiae where there are some pale hairs, scopa compact, its hairs of the lower half mostly whitish, of its upper blackish, propodeum with its enclosure poorly defined, dullish and finely reticulated, rest of upper face of propodeum covered with longer, paler, reddish hair than the dorsulum, abdomen with its tergum shining, first, second, third and fourth tergite covered with erect reddish hair, apical edge of first, second, third and fourth tergites with a brownish border, pygidium polished, nearly planate, with a median triangular embossed area, basal fourth of fifth tergite with ochreous hairs, rest of fifth tergite with blackish hairs, fimbria blackish.

Holotype—♀, Chileotin, B. C., Apr. 29, 1920 (E. R. Buckell); No. 656 in the Canadian National Collection, Ottawa.

Paratypes—3 ♀s, same data, same locality and collector, May 2, 5, 1920. Instead of reddish hair, two of the paratypes have ochreous hairs.

***Andrena (Andrena) buckelli* new species**

Related to *A. (A.) monogonoparia* Viereck in the male. The female has characters in common with *A. (A.) clarkella* Kby. and is superficially like *A. (A.) milwaukeeensis* Graen.

Male. Length 11 mm.; body black, mostly covered with pale ochreous hair above; temples produced, almost right angular, the angle apparently opposite middle of eye and supplemented above by a somewhat reflexed, angulate edge, head covered with brownish and blackish hair except along the vertex where the hairs are pale ochreous, clypeus somewhat flattened, nearly convex, more shining and more distinctly punctured than the face, clypearea poorly developed, sculpture

of the clypeus not hidden by the moustache, labrarea underneath with a broad rounded emargination, polished, joint 3 of antennae: 4:10:6, flagel almost straight in outline, antennae blackish throughout, mandible nearly typical, rather slender, extending beyond the outer edge of the labrum and beyond the middle third of its fellow, palpi typical; thorax above and most of the mesopleura covered with an abundance of ochreous hairs, hairs of dorsulum seemingly shorter than hair of mesopleura, dorsulum dullish, mesopleura bordered with blackish hairs, scutel hairy and sculptured much like the dorsulum but with denser longer hair, metanotum hairy like the scutel, wing membrane uniformly tinged with brown, legs blackish brown excepting the small joints of the tarsi, which are rather dark brown, legs covered with brownish and blackish hairs; propodeum with its enclosure poorly defined, mostly finely reticulated, upper and posterior face of propodeum with ochreous hair, propodeal pleura with blackish hairs; abdomen with its tergum shining, almost polished, finely reticulated and indistinctly punctured, first tergite, with erect pale ochreous hairs, second tergite down the middle and at base with ochreous hairs, rest of tergites with brownish nearly appressed hairs, anal process broad and slightly emarginate at apex, hair at apex of abdomen brownish or blackish, seventh sternite nearly entire, its apical edge only slightly emarginate, hypopygium of the *A. (A.) albihirta* Ashmead type. In the ♂ paratypes there is more or less whitish hair on the face and femora.

Female. Length 13 mm.; body black, mostly covered with black hairs. Head covered with black hairs, fovea filled with dark seal brown or blackish hairs, vertex and front with ochreous hairs, face shiny, partly indistinctly reticulate, with distinct punctures that are as many as five or more puncture widths apart, clypeus hardly elevated above the apical margin, convex, sculptured like the face except that the punctures are larger, well defined and farther apart, clypearea wanting or if present then poorly defined, clypeus thinly hairy, its sculpture not at all hidden by hairs, labrarea truncate nodose at end, labrum without a distinct median longitudinal crista between the labrarea and apical edge of labrum, antennae blackish throughout, mandibles typical, robust, palpi typical; thorax above covered with an abundance of reddish hairs which extend half way down on the pleura, mesopleura mostly with black or blackish hairs, scutel hairy and sculptured much like the dorsulum, legs blackish except for the small joints of the tarsi which are more or less dark translucent brown, mostly covered with black or blackish hairs, anterior surface of hind femora with silvery white hairs, scopa typical, its hairs of the lower edge almost white, elsewhere black or blackish, propodeum with its enclosure poorly defined, dullish and finely reticulated, rest of upper face of propodeum covered with finer reddish hair than mesopleura, abdomen with its tergum shining, covered with nearly erect hairs that are reddish on the first and second tergites, third tergite mostly with black hairs but with reddish hairs down the middle, apical edge of tergites with a dark or black border, pygidium nearly planate, somewhat swollen, rounded at apex, fimbria blackish.

Holotype—♂, Penticton, B. C., June 9, 1919 (E. R. Buckell); No. 651, in the Canadian National Collection, Ottawa.

Allotype—♂, Penticton, B. C., April 25, 1919 (E. R. Buckell).

Paratypes—8 ♂, 14 ♀s, Penticton, B. C., April 12, 1919 (E. R. Buckell); Kaleden, B. C., April 17, 1919 (E. R. Buckell); Lillooet, B. C., May 9, 1916 (E.

W. Anderson) May 21, 1917 (A. W. A. Phair); Lytton, B. C., April 14, 1922 (W. B. Anderson); North Bend, B. C., April 24, 1921 (W. B. Anderson); Okanagan Falls, B. C., June 13, 1919 (E. R. Buckell); Salmon Arm, B. C., April 24, 1914 (Tom Wilson); Thompson River, B. C., April 26, 1914 (Tom Wilson).

In the series of specimens before me the pale hairs of the head and thorax range from bright reddish to pale ochreous and in some specimens the pygidium has a marginal channel bounding an embossed area.

(To be continued)

THE GENERIC POSITION OF *BERIS VIRIDIS* SAY (STRATIOMYIDAE, DIPTERA)*

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Beris viridis Say has for many years been considered as belonging to the genus *Actina* and as such is the only North American representative of the genus. Originally described in the genus *Beris*, it is referred in the Aldrich "Catalogue of North American Diptera" to *Actina*, with a note that the reference is by Mr. Kahl. Williston, in his latest "Manual of North American Diptera" (1908) calls attention to the fact that the species in question must be referred to *Actina* with doubt. Generally speaking *B. viridis* is much more closely allied to *Beris* than *Actina*, as demonstrated by the well developed palpi and the presence of only three posterior veins. It is, however, separable from *Beris* by a character which is constant in both sexes, viz: the posterior tibiae are as large or larger apically than the considerably swollen posterior basitarsi while in *Beris* the posterior tibiae are only slightly swollen. In addition, the eyes of the ♂ in this species are broadly separated, while they are contiguous in all the species I have seen of both *Beris* and *Actina*. These characters are sufficiently important to warrant the placing of the species in a new genus, which might be characterized as follows:

Allactina new genus

Palpi large; first antennal joint over twice as long as second, the third as long as the two basal combined; scutellum with six large spines; three posterior veins, the third one rising from the base of the discal cell or from the posterior apex of the second basal cell; third vein branched. Posterior tibiae much swollen on apical half, their basitarsi long, swollen. *Genotype, Beris (Actina) viridis* Say.

It might be noted that this species will not trace out in Williston's Manual (p. 168) to the genus *Actina*. It is presumed that it will run to couplet 10, but in reality it traces to *Beris*.

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